

WHAT IS CLAIMED IS:

1. An apparatus for use in conjunction with at least one device which is implanted into a living being, comprising;

a communication device for communicating with the at least one implanted device and an external monitor, wherein the communication device of the apparatus is electrically independent of the at least one implanted device;

a memory device for storing electronic data; and

a control module for processing the data stored in the memory device and managing communication over the communication device.

2. The apparatus of claim 1 further comprising a power supply that provides power to the communication device, the control module, and the memory device.

3. The apparatus of claim 1 further comprising a sealed case suitable for implantation in the living being, the case housing the communication device, the control module, and the memory device.

4. A communication apparatus for use in conjunction with one or more devices which are implanted into a living being, comprising;

at least one two-way transceiver for communicating with at least one of an external monitor and the one or more implanted devices, wherein the at least one two-way transceiver is electrically independent of the one or more implanted devices;

a memory device for storing data; and

a control module for processing data stored in the memory device and managing communication using the at least one two-way transceiver.

5. The apparatus of claim 4 further comprising a sealed case suitable for implantation in said living being, the case housing the at least one two-way transceiver, the control module, and the memory device.

6. The apparatus of claim 4 further comprising at least one sensor for detecting stimulus generated by at least one of the one or more implanted devices and the living being.

7. The apparatus of claim 4 further comprising a power supply which is rechargeable.

8. The apparatus of claim 7 wherein the power supply is recharged using an electromechanical recharging system.

9. The apparatus of claim 7 wherein the power supply is recharged using an induction-based recharging system.

5 10. The apparatus of claim 4 wherein the memory device has a capacity sufficient to record all information relating to an event experienced by the one or more implanted devices.

11. The apparatus of claim 5 wherein the sealed case includes mechanical attachment components for attaching to the one or more implanted devices.

10 12. A system for monitoring and communicating with at least one device implanted within a living being comprising:

a monitoring center which is capable of communicating, storing, and processing electronic data;

a communication network capable of long-range communication;

15 an external monitor located external and in proximity to the living being and capable of transmitting and receiving communication signals to and from the monitoring center via the communication network; and

20 a transceiver apparatus capable of communicating, storing and processing electronic data, wherein the transceiver apparatus is capable of transmitting and receiving communication signals to and from the at least one implanted device and the external monitor, and wherein the transceiver apparatus is electronically independent from the at least on implanted device.

25 13. The system of claim 12 wherein said communication signals are encrypted between the at least one implanted device, the transceiver apparatus, the external monitor, and the monitoring center.

14. The system of claim 12 wherein the transceiver apparatus is contained in a sealed case capable of being implanted into a living being.

15. The system of claim 12 wherein the communication network is a land-line telephone network.

30 16. The system of claim 12 wherein the communication network is a satellite communication network.

17. The system of claim 12 wherein the communication network is a wireless network.

18. The system of claim 12 wherein the transceiver apparatus is configured to sense actions performed by the at least one implanted device.

5 19. The system of claim 12 wherein the transceiver apparatus is configured to detect physiological signals from the living being.

20. The system of claim 12 wherein the external monitor includes a microprocessor and stored instructions for execution on said microprocessor.

21. A method of monitoring and reprogramming at least one device
10 implanted within a living being, the method comprising the steps of:

sensing actions performed by the at least one implanted device and
physiologic signals from the living being;

compiling information defining the performed actions and physiological
signals into a data report;

15 storing the data report;

analyzing the data report to determine whether the at least one implanted
device operates properly; and

remotely reprogramming the at least one implanted device if it is
determined in the analyzing step that the at least one implanted device is not
20 operating properly.

22. The method of claim 21 wherein the sensing step is performed by a
transceiver apparatus capable of two-way communication with the at least one
implanted device.

23. The method of claim 22 further comprising the step of sending the data
25 report from the transceiver apparatus to a monitor external to the living being and
located in proximity to the transceiver apparatus.

24. The method of claim 23 further comprising the step of sending the data
report from the external monitor to a monitoring center via a communication network.

25. A system for monitoring a device implanted in a body, comprising:

30 a monitor located external to the body;

a transceiver located so as to transmit and receive signals between the
transceiver and the device, and so as to transmit and receive signals between the

transceiver and the monitor such that device operation information is communicated from the device via the transceiver to the monitor, and such that control signals are communicated from the monitor via the transceiver to the device.

5 26. The system of claim 25 wherein the monitor includes circuitry for signal evaluation.

 27. The system of claim 25 wherein the monitor produces visual information regarding the device operation information.

 28. The system of claim 25 wherein the monitor produces audio signals
10 regarding the device operation information.

 29. The system of claim 25 wherein the monitor produces control signals in response to communication received from the device via the transceiver, and wherein the control signals are communicated to the device via the transceiver.

 30. The system of claim 25 wherein the monitor produces control signals in
15 response to input from a user, and wherein the control signals are communicated to the device via the transceiver.

 31. The system of claim 25 wherein the transceiver includes a memory device capable of storing the device operation information and the control signals.

 32. The system of claim 25 wherein the transceiver includes a control
20 module capable of processing electronic data.

 33. The system of claim 25 wherein the transceiver includes a communication device capable of providing a communication interface between the device and the monitor.

 34. The system of claim 25 wherein the transceiver is implanted within the
25 body.

 35. The system of claim 25 wherein the transceiver is external to the body.

 36. A method of monitoring and responding to the physical condition of a patient, wherein the patient has one or more devices implanted in the patient's body, comprising the steps of:

30 sensing actions performed by the one or more implanted devices and physiologic signals from the patient;

compiling information defining the performed actions and physiological signals into a data report;

storing the data report;

5 analyzing the data report to determine whether the at least one implanted device operates properly and whether the patient needs medical treatment;

notifying medical personnel if it is determined that the implanted device in not operating properly; and

alerting medical personnel if it is determined that the patient needs medical treatment.

10 37. A system for notifying medical personnel of a patient's medical needs, wherein the patient has at least one device implanted in the patient's body, comprising:

a monitor located external to the patient's body;

15 a transceiver located so as to transmit and receive signals between the transceiver and the implanted device, and so as to transmit and receive signals between the transceiver and the monitor such that device operation information is communicated from the implanted device via the transceiver to the monitor, and such that control signals are communicated from the monitor via the transceiver to the implanted device; and

20 a monitoring center configured so as to receive the device operation information from the monitor, and so as to notify a first contact medical personnel that the patient needs medical treatment, and so as to notify a second medical personnel that the patient needs treatment if the first contact medical personnel does not respond to notification, and so as to notify subsequent contact medical personnel if previous contact medical personnel do not respond to notification.

25 38. A method of notifying medical personnel of a patient's medical needs, wherein the patient has at least one device implanted in the patient's body, comprising the steps of:

determining that the patient needs medical treatment;

30 sending an alert message to a medical contact; and

sending a subsequent alert message to a subsequent medical contact if a response message in response to a previously sent alert message is not received.

39. A system for monitoring and reprogramming at least one device implanted within a living being comprising:

means for sensing actions performed by the at least one implanted device and physiologic signals from the living being;

5 means for compiling information defining the performed actions and physiological signals into a data report;

means for storing the data report;

means for analyzing the data report to determine whether the at least one implanted device operates properly; and

10 means for remotely reprogramming the at least one implanted device if it is determined by the analyzing means that the at least one implanted device is not operating properly.

40. The system of claim 39 wherein the sensing means is a transceiver apparatus capable of two-way communication with the at least one implanted device.

15 41. The system of claim 40 further comprising means for sending the data report from the transceiver apparatus to a monitor external to the living being and located in proximity to the transceiver apparatus.

42. The system of claim 41 further comprising means for sending the data report from the external monitor to a monitoring center via a communication network.

20 43. A system for monitoring and responding to the physical condition of a patient, wherein the patient has one or more devices implanted in the patient's body, comprising:

means for sensing actions performed by the one or more implanted devices and physiologic signals from the patient;

25 means for compiling information defining the performed actions and physiological signals into a data report;

means for storing the data report;

means for analyzing the data report to determine whether the at least one implanted device operates properly and whether the patient needs medical treatment;

30 means for notifying medical personnel if it is determined that the implanted device is not operating properly; and

means for alerting medical personnel if it is determined that the patient needs medical treatment.

44. A system for notifying medical personnel of a patient's medical needs, wherein the patient has at least one device implanted in the patient's body, comprising:

- 5 means for determining that the patient needs medical treatment;
means for sending an alert message to a medical contact; and
means for sending a subsequent alert message to a subsequent medical contact if a response message in response to a previously sent alert message is not received.

10 45. A method of monitoring and reprogramming at least one device implanted within a living being, the method comprising the steps of:

- sensing actions performed by the at least one implanted device and physiologic signals from the living being;
evaluating the sensed actions and physiological signals to determine the operation integrity of the at least one implanted device; and
15 remotely reprogramming the at least one implanted device if it is determined that the at least one implanted device is not operating properly.

46. The method of claim 45 wherein the sensing step is performed by a transceiver apparatus capable of two-way communication with the at least one
20 implanted device.

47. The method of claim 46 further comprising the step of sending the data report from the transceiver apparatus to a monitor external to the living being and located in proximity to the transceiver apparatus.

48. The method of claim 47 further comprising the step of sending the data
25 report from the external monitor to a monitoring center via a communication network.

49. A system for monitoring and reprogramming at least one device implanted within a living being, the method comprising the steps of:

- means for sensing actions performed by the at least one implanted device and physiologic signals from the living being;
30 means for evaluating the sensed actions and physiological signals to determine the operation integrity of the at least one implanted device; and

means for remotely reprogramming the at least one implanted device if it is determined that the at least one implanted device is not operating properly.

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